REMARKS

Claim 5 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for use of the trademark "TEFLON". The limitations of Claim 5 are herein incorporated in claim 1 and the trademark term is replaced by the generic term "polytetrafluoroethylene."

The Examiner rejected claims 1-4 under 35 U.S.C. § 102(b) as being anticipated by Plowman et al. (US 4732660), and rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Plowman et al. Plowman likewise discloses an electrolyzer having a cathode, anode, spacing means separating the current distributor, and Teflon™ membrane. The cathode has a current distributor on it. Plowman's electrolyzer is designed for use in the electrolysis of brine to produce an aqueous alkali metal hydroxide solution and halogen.

Applicant's invention, in contrast, produces ozone by electrolysis of water. The difference in purpose is achieved by a different structure. Specifically, Applicants anode is separated from its cathode by three things: 1) a solid polymer electrolyte membrane (40); and 2) an auxiliary electrode (50) between the cathode and the solid polymer electrolyte membrane; and 3) a Teflon™ spacer (60) for providing a gap between the solid polymer electrolyte membrane (40) and the anode. All of these elements are required in claim 1. Moreover, Applicant previously amended claim 1 to require an apparatus "consisting of" these elements. This is "closed-ended" claim language which means that the apparatus has the recited elements and no more. Plowman's device additionally includes spacer rods 15, a cathode end plate 12, an anode end plate 61, and an oxygen feed space 20 with an oxygen feed port 21 and an oxygen exit port

22. Such elements are excluded by Applicant's existing claims, and inasmuch as the Examiner has not articulated how Applicant's claims read on these elements he has failed to make a prima facie case of anticipation.

Moreover, the positive elements recited in Applicant's claims patentably distinguish Plowman. Claim 1 requires an auxiliary electrode 50 in the form of a fine woven wire in order to provide a close contact between the cathode 20 and the solid polymer electrolyte membrane 40. The wire is a mesh having 10~100 meshes and a thickness of 0.1~2.0 mm, for passing hydrogen ions produced at the anode through to the cathode. This promotes scaling on the auxiliary electrode 50 rather than on the anode or cathode where electrolytic resistance would increase due to deposition and accumulation of the scale.

The Examiner alternately equates Applicant's auxiliary electrode 50 with what Plowman alternately calls his cathodic current distributor, and current collector (a current collector 11 bonded to the polymer bonded carbon composite sheet laminate 10 cathode). The metal mesh current collector 11 is 20 x 20 x 0.010 inch metal mesh. See col. 4, lines 51 -59. However, Plowman's current distributor is typical of chlor-alkali cells, where an electric current is passed through a saturated brine (sodium chloride salt) to produce chlorine gas and caustic soda (sodium hydroxide). One of the unwanted by-products in existing chlor-alkali cells is hydrogen which forms at the cell cathode. Current distributors prevent the formation of molecular hydrogen at the cathode. In Plowman, a catholyte compartment 30 is established by the spacer rods 15 between the current collector 11 and membrane 40. Thus, the current collector 11 is clearly not

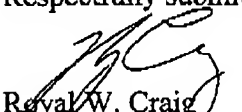
in contact with the membrane 40. The compartment 30 is designed to be pressurized, which is not at all related to Applicant's invention.

In contrast, Applicants auxiliary electrode 50 is inserted between the cathode 30 and the solid polymer electrolyte membrane 40 in order to reduce the scale forming on the surface of the cathode 30. Applicants auxiliary electrode 50 is sandwiched between the cathode 30 and the membrane 40, and maintains direct contact with both. Applicant clearly describes its auxiliary electrode 50 as providing close contact between the cathode 20 and the solid polymer electrolyte membrane 40. Again, Applicant believes that its closed language "consisting of" excludes Plowman's structure. Moreover, Plowman does not teach or suggest auxiliary electrode 50 in the form of a fine woven wire mesh having 10~100 meshes and a thickness of 0.1~2.0 mm as required by claim 1. Nevertheless, Applicant herein proposes a further amendment to claim 1 in order to specify that the auxiliary electrode is "sandwiched between the cathode and the solid polymer electrolyte membrane and in direct contact there between, wherein the auxiliary electrode passes hydrogen ion produced at the anode through the cathode." It is submitted that this additional limitation patentably distinguishes claim 1, as well as depending claim 3, and entry is requested in order to facilitate prosecution.

The limitation of claims 2 and 4-5 have been incorporated into claim 1 as well, and claims 2 and 4-5 are canceled.

* * *

Respectfully submitted,



Royal W. Craig
Reg. No. 34,145
(410) 385-2383
Attorney for
Ober, Kaler, Grimes & Shriver

120 East Baltimore Street, Suite 800
Baltimore, MD 21202-1643
Telephone: 410-347-7303
Facsimile: 443-263-7503